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deBeers

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(54) **BEVERAGE BOTTLE AND RETAINING CLIP ASSEMBLY**

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(51) **Int. Cl.**
A45F 5/02 (2006.01)

(52) **U.S. Cl.**
CPC . ***A45F 5/02*** (2013.01); ***A45F 5/021*** (2013.01); *A45F 2200/0583* (2013.01)

(58) **Field of Classification Search**
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USPC 224/148.1–148.7, 162
See application file for complete search history.

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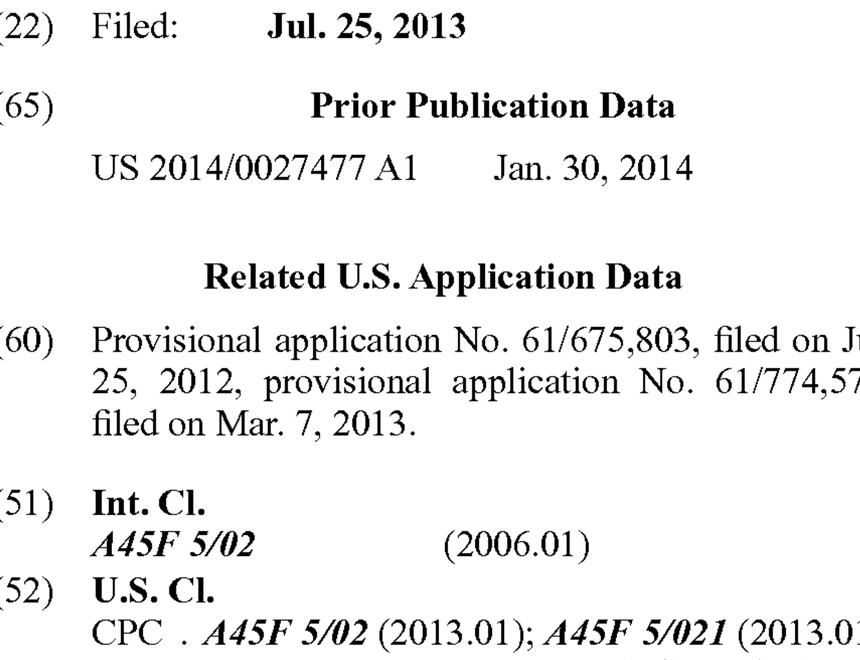
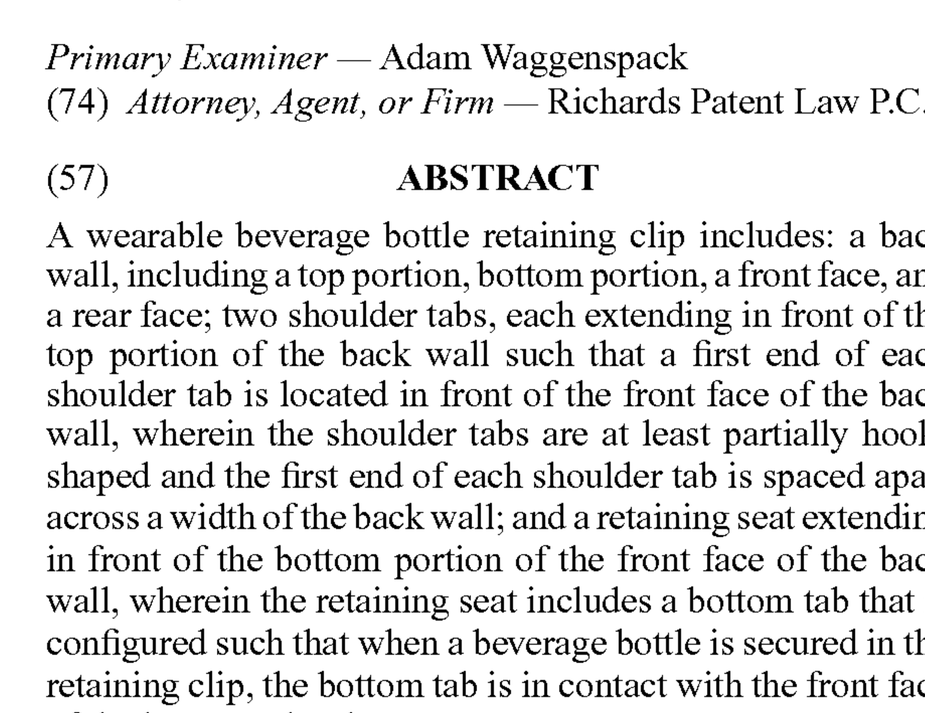
(57) **ABSTRACT**

A wearable beverage bottle retaining clip includes: a back wall, including a top portion, bottom portion, a front face, and a rear face; two shoulder tabs, each extending in front of the top portion of the back wall such that a first end of each shoulder tab is located in front of the front face of the back wall, wherein the shoulder tabs are at least partially hook-shaped and the first end of each shoulder tab is spaced apart across a width of the back wall; and a retaining seat extending in front of the bottom portion of the front face of the back wall, wherein the retaining seat includes a bottom tab that is configured such that when a beverage bottle is secured in the retaining clip, the bottom tab is in contact with the front face of the beverage bottle.

9 Claims, 5 Drawing Sheets





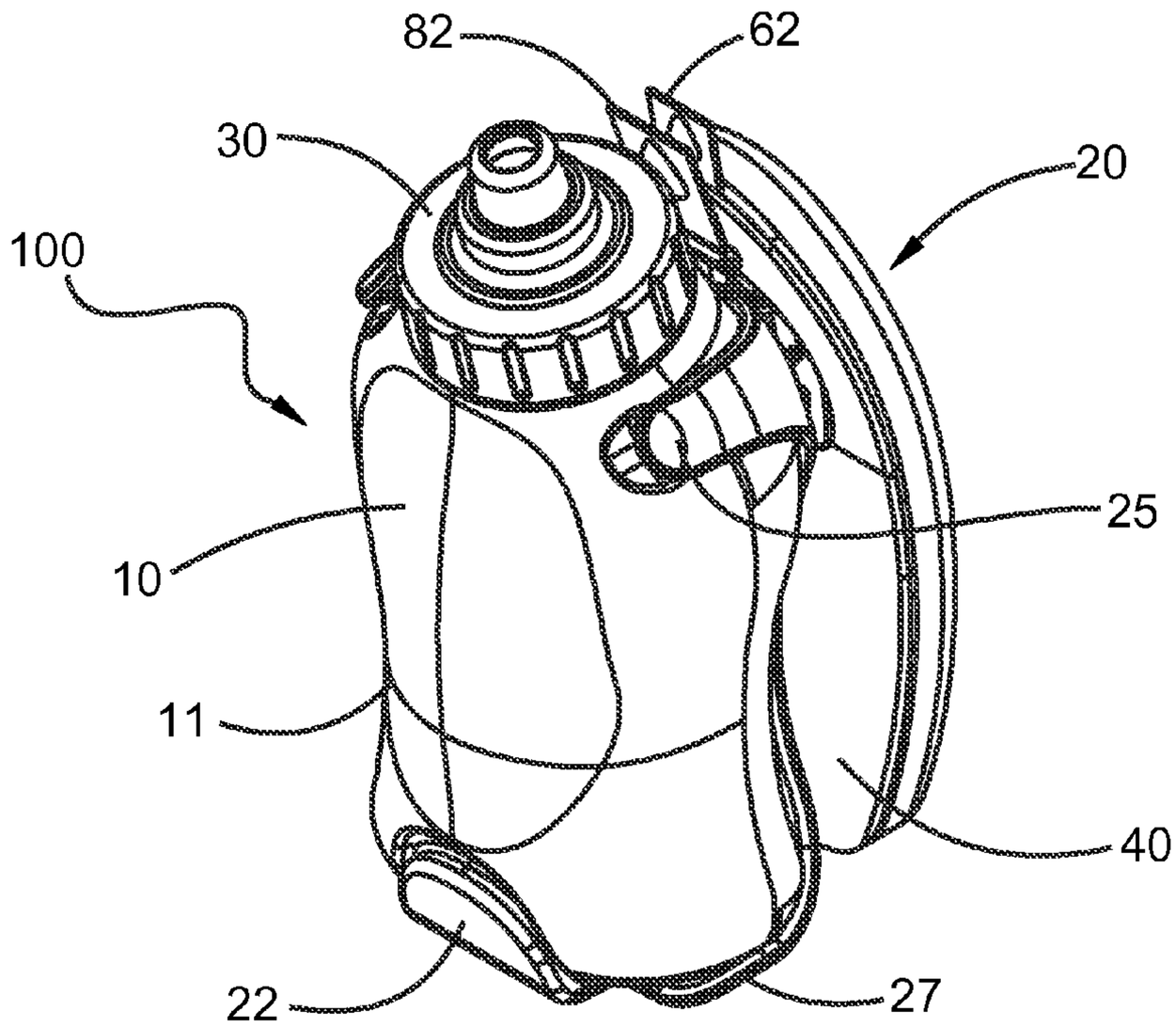

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FIG. 1A

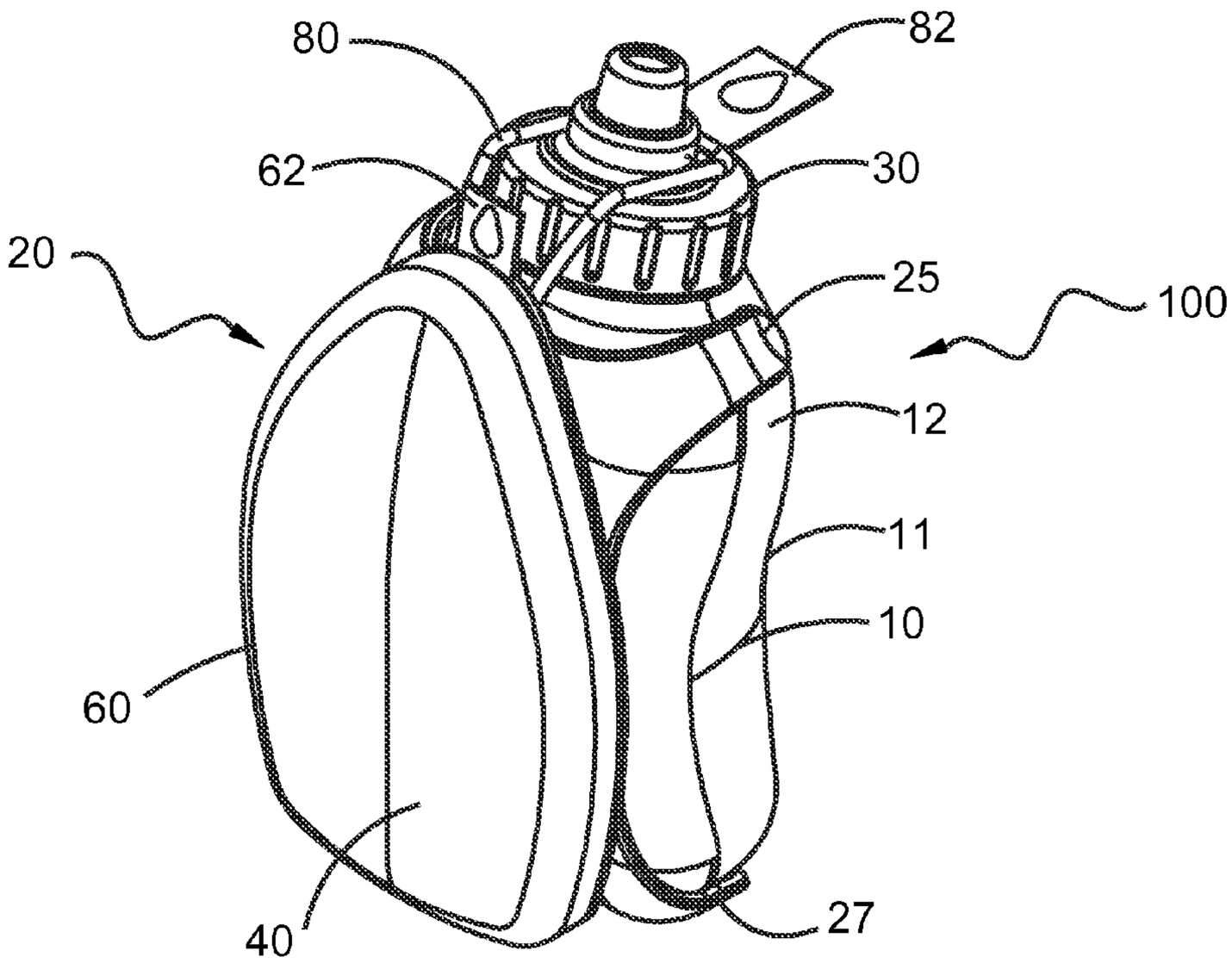
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FIG. 1B

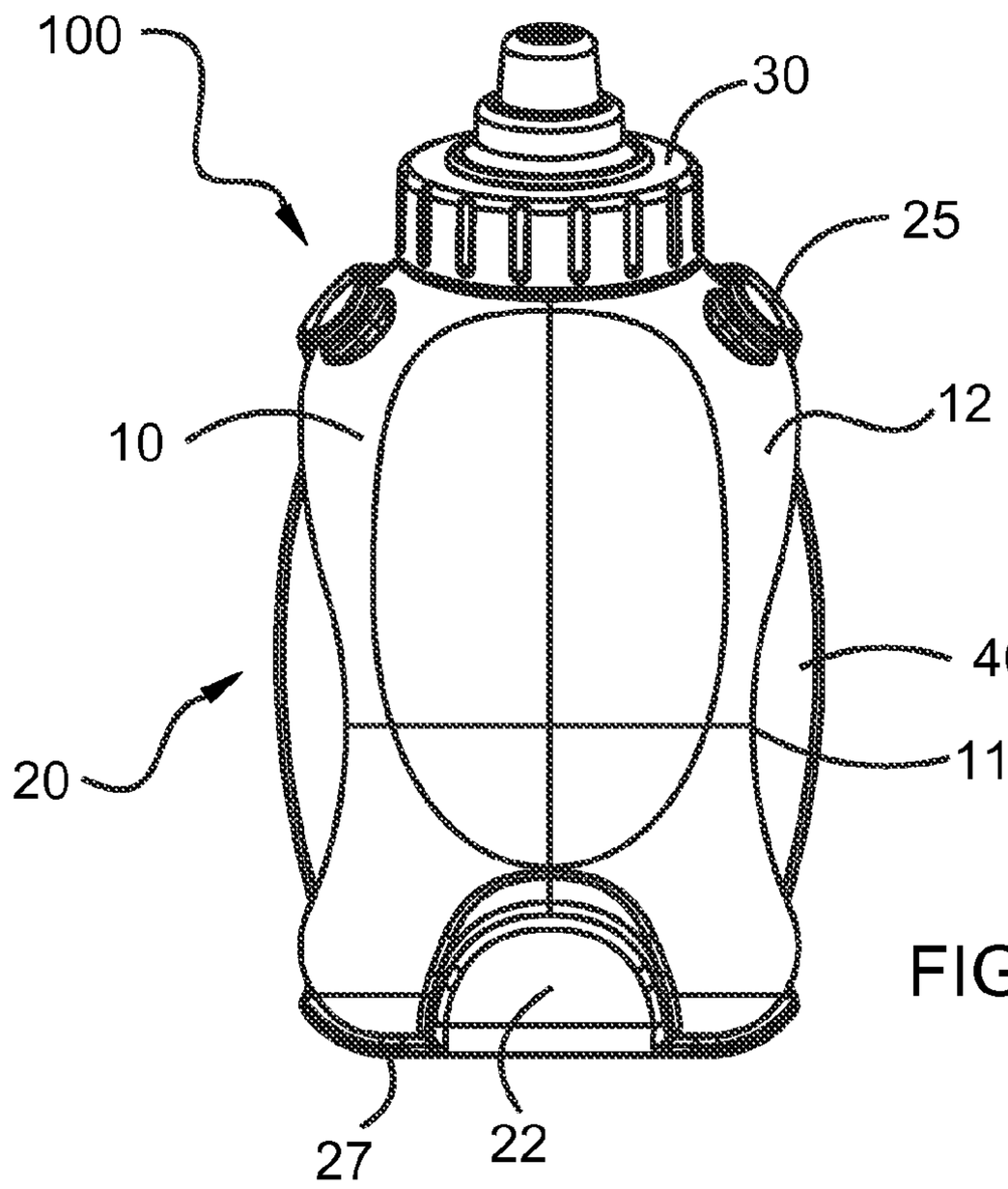
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FIG. 2A

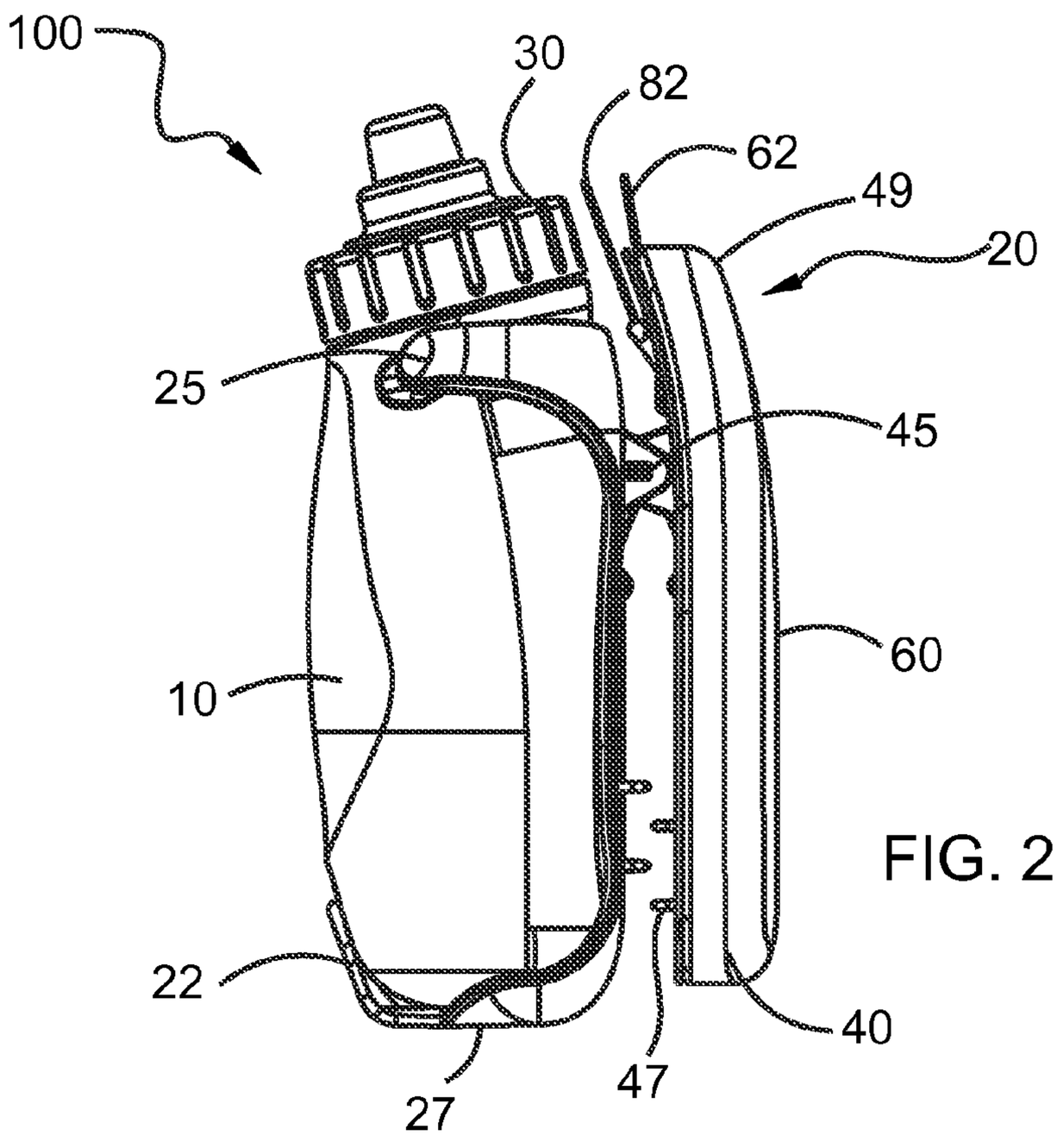
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FIG. 2B

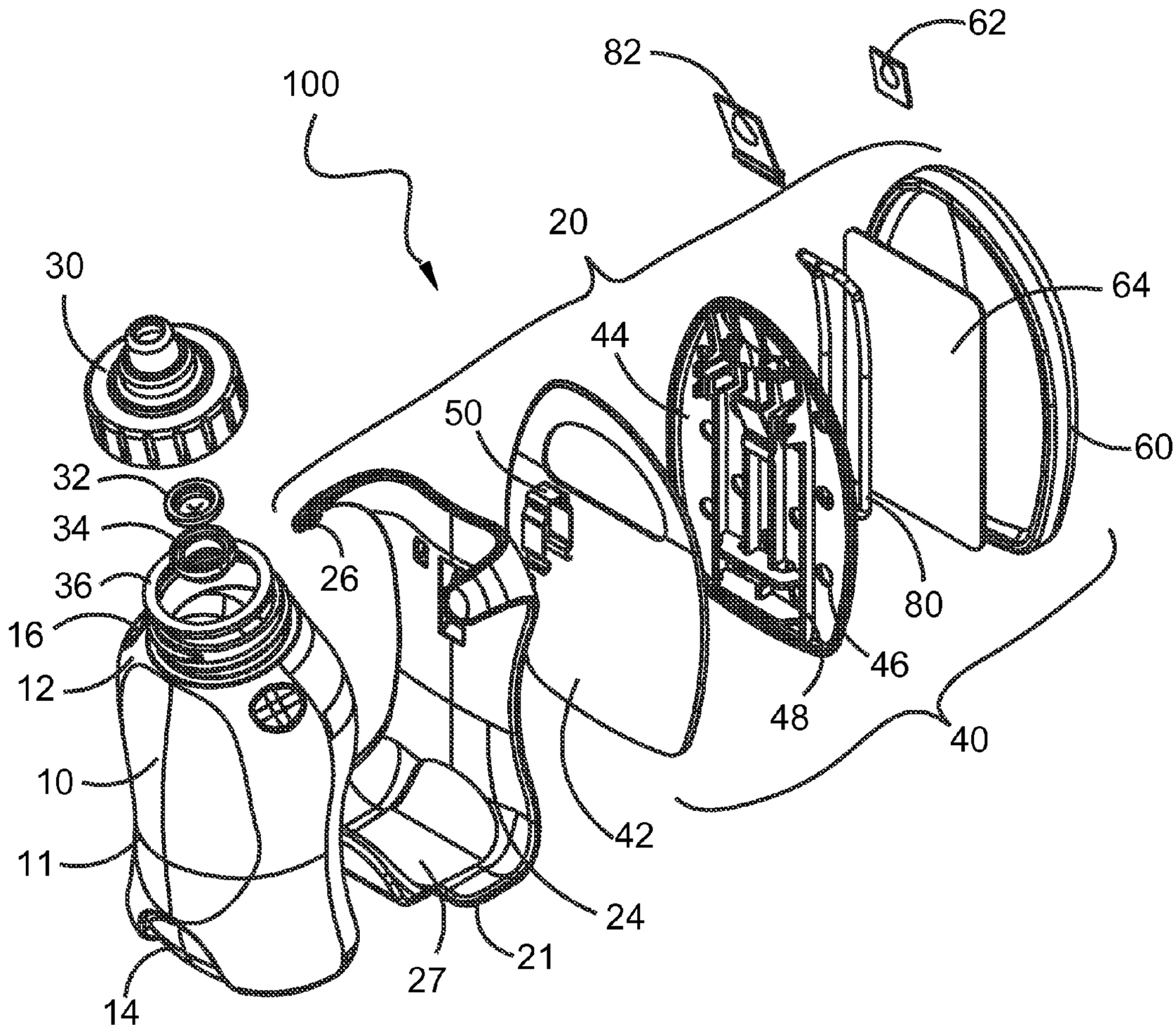
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FIG. 3

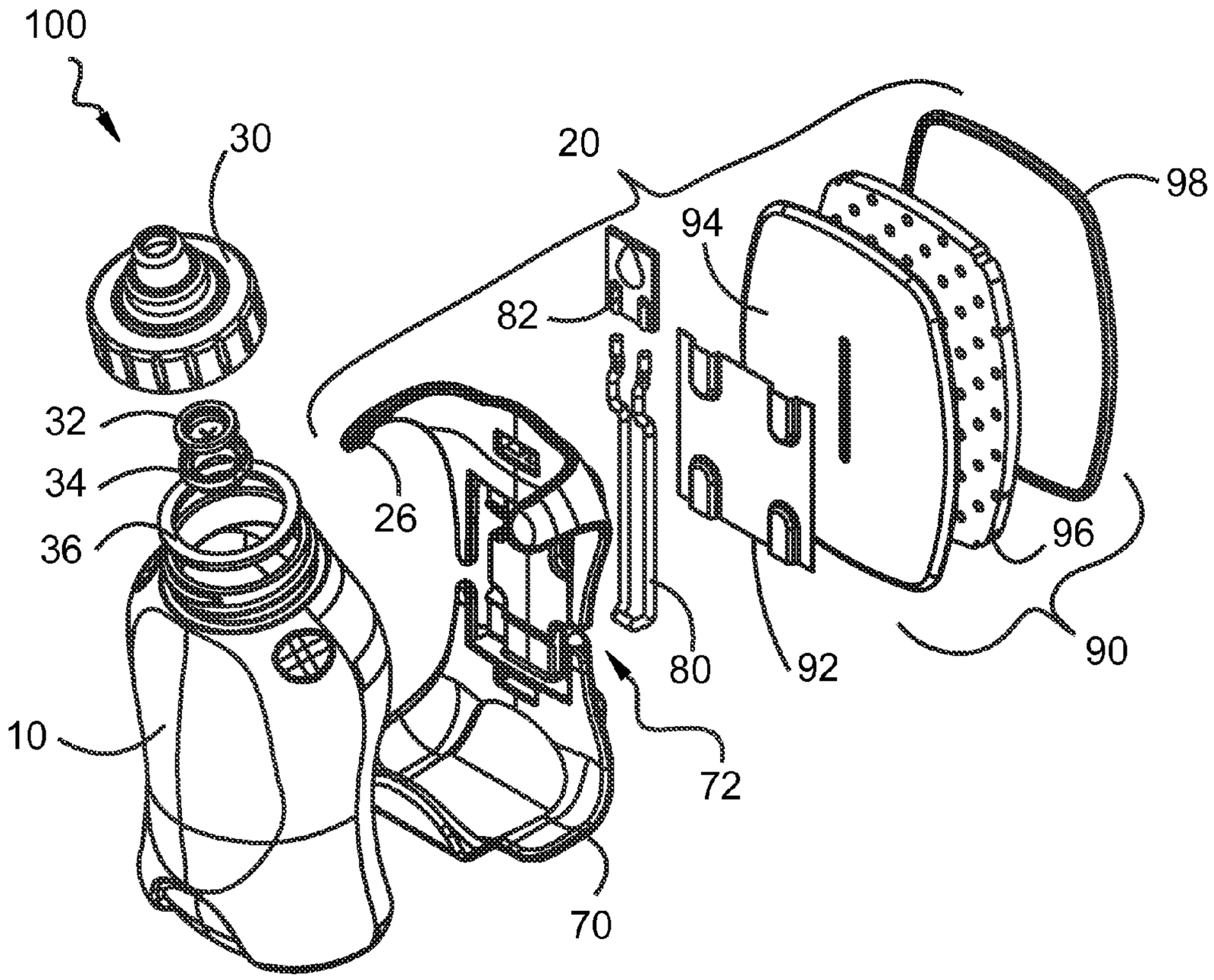

FIG. 4

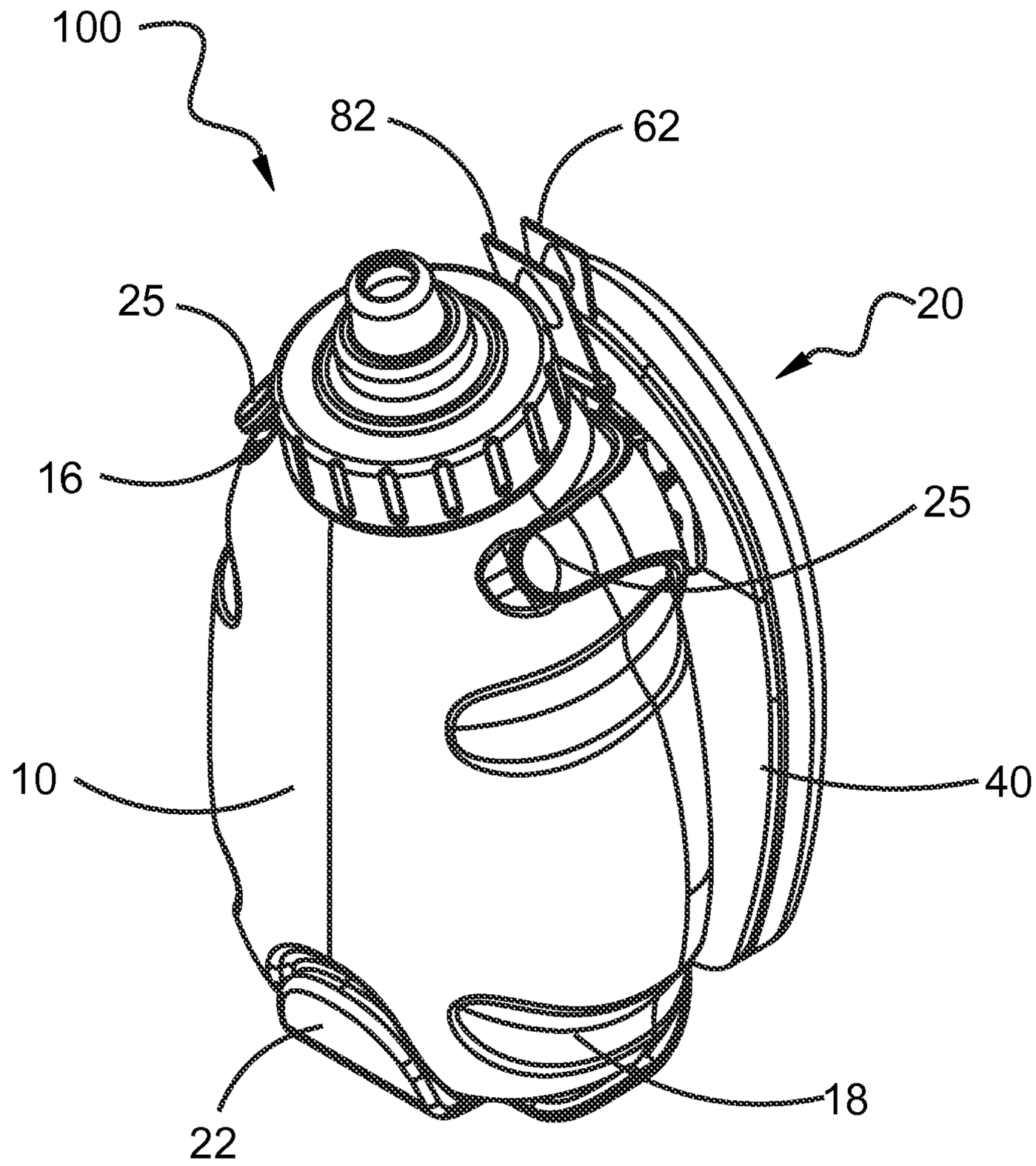

FIG. 5

BEVERAGE BOTTLE AND RETAINING CLIP ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims the benefit of U.S. Provisional Application No. 61/675,803 filed on Jul. 25, 2012, and U.S. Provisional Application No. 61/774,570 filed on Mar. 7, 2013, each of which is incorporated herein by reference in its entirety.

BACKGROUND OF THE INVENTION

The present subject matter discloses a beverage bottle and retaining clip assembly adapted for use during physical activity, such as running or other exercise. The beverage bottle and retaining clip assembly provide a user secure, quick-release, access to a beverage bottle while engaged in physical activity.

Distance running and similar long-duration activity (e.g. hiking, distance walking, etc.) are demanding for the participant, not the least of which is ensuring proper hydration and nutrition throughout the duration of the activity. Particularly since these types of activities can be performed in nearly limitless conditions, and because the participant may not wish to disrupt the activity to address hydration and nutrition needs, it is important to be able to carry one or more beverages throughout the activity and to be able to quickly and securely access the one or more beverages with minimal disruption to the activity.

Numerous attempts to solve these problems have been tried. Some attempts have been made to provide handheld beverage bottles and adjustable hand straps. Others have attempted to provide beverage bottles that attach to a belt, waistband, or similar strap through clips, straps, holsters, etc. Each provides advantages and disadvantages; however, the present subject matter deals with improving the design and function of beverage bottles and retaining clip attachments for use with belts or similar straps.

There are many important design considerations for designing beverage bottles and clip attachments for use with belts or similar straps. Prior attempts to address the needs of participants in such activities have failed to balance the varied design considerations in a way that solves all of the following considerations.

Stability of the beverage bottle and the retaining clip is essential to user comfort. Users do not like a bottle that bounces against their body as they run. In addition, the security of the bottle in the retaining clip and the security of the bottle to the user's body improve the effectiveness and comfort of the system. A beverage bottle that does not stay in place within the retaining clip is at least a distraction to the user during the activity. In worse case scenarios, the user may lose the bottle during the activity if it is not held in place. In addition to the distraction and potential loss of the bottle, if the retaining clip will not remain secure in place against the user's body, the retaining clip will be uncomfortable.

While the stability of the bottle and the retaining clip are important, it is equally important that the bottle is easy to remove from the retaining clip when the user desires. If the user cannot easily remove the bottle, it will be a distraction from the activity when it comes time to use the bottle. The appropriate balance between security and ease of access is essential for a quality design.

There is also a delicate balance between the distance from the body the bottle sits on the user and the amount of padding provided between the retaining clip and the user's body.

While it is more comfortable and stable for the user when the bottle securely sits closer to the user's body, some amount of padding between the user and the bottle and retaining clip may also improve the comfort of the system. It is a challenge to provide an appropriate amount of cushioning without moving the bottle and retaining clip too far from the body.

With respect to positioning on the body, there is a balance to be had between securing the bottle in a position that is out of the way of the user while not making the bottle too difficult to reach. For example, it is easier for a user to grab towards his or her lower back as it requires less arm flexibility than a location higher up the user's back. Accordingly, the vertical grip location of the bottle may be one of the critical design elements.

A further issue of comfort is the problem of ride-up with body-mounted bottle systems. Ride-up occurs when bottle systems, such as those secured by a belt, move up the waist in response to user movement while running. Ride-up is uncomfortable and distracting, prompting runners to slow or stop to adjust the system. Existing systems, such as belt-based bottle holster systems, increase ride-up by requiring the user to remove the bottle by pulling the bottle up and out of the holster. As the user pulls the bottle up, the belt may be pulled up with the bottle until it is released. Thus, it is important that the forces imparted during removal and re-seating of the bottle minimize ride-up.

To be effective, a user must be able to remove the bottle from the retaining clip without accidentally discharging the fluid from the bottle. In order to do so, the user must be able to apply enough force to the bottle to release it from the retaining clip without activating the valve or otherwise cause the bottle to squirt its contents. Design considerations related to these features include the strength of the bottle walls, the strength of the retaining clip's retention of the bottle, the valve design, etc.

Another common issue with the design of beverage bottles and clip attachments for use with belts or similar straps is the difficulty the user faces in reseating the bottle into its retaining clip. Because the user will be active when using the product, it is important for the bottle and retaining clip to be easy to reseat. Moreover, because many users prefer to wear their bottles on their backs, the reseating of the bottle into the retaining clip is a "blind activity." Accordingly, the seating mechanism should be designed to assist in preventing improper alignment and improper loading of the bottle into the retaining clip during physical activity in which the user may not be able to direct much attention to the act of reseating the bottle.

Numerous additional design considerations must be balanced to provide an appropriate solution. For example, the retaining clip height must not be so large and/or obtrusive that it interferes with the bending of the waist or lower back of the user, there must be minimal side-to-side play in the retention of the bottle to the clip and the retention of the clip to the user's belt, the shape of the bottle must be comfortable for the user, etc.

As can be seen, there are numerous design considerations to be balanced to provide an appropriate system to address the needs of active users of hydration systems. Accordingly, there is a need for a beverage bottle and retaining clip assembly that provide a user secure, quick-release, access to a beverage bottle while engaged in physical activity, as described and claimed herein.

BRIEF SUMMARY OF THE INVENTION

The present disclosure provides a beverage bottle and retaining clip assembly that provide a user secure, quick-

release, access to a beverage bottle while engaged in physical activity. More specifically, the present subject matter discloses an injection molded plastic assembly with spring clip and pad for releasably securing a beverage bottle therein. Various examples are provided herein.

In one embodiment, the beverage bottle and retaining clip assembly provided herein includes a blow molded beverage bottle and cap. The cap may include a valve that releases fluid when the bottle is squeezed, but sealed during regular use. In various embodiments, the valve may be a silicone J or "Zel" valve, a spray valve, a bite valve, a dual valve, etc.

In the preferred embodiment, a retaining clip, including a retaining seat and two shoulder tabs, holds the bottle in place in a snap-fit connection. The retaining seat may include a bottom tab extending from the retaining seat that mates with a bottom pocket at the bottom of the bottle and the two shoulder tabs may secure the shoulder of the bottle around the shoulder of the bottle.

In use, the bottle snaps out from the shoulder tabs of the retaining clip and away from the bottom of the retaining clip. For re-seating, the bottom is toed into the retaining clip first and then the top of the bottle is snapped in place with the bottle cap being centered between the two shoulder tabs.

In one embodiment, a retaining clip bottle holder is mated to a retaining clip base via a pivot and the two elements are secured together via a metal spring. Accordingly, the retaining clip bottle holder and retaining clip base form a spring-loaded clamp that may be secured to a person's waistband similar to the clamping action of a plastic clothes hanger. Squeezing the bottle cap and a finger pivot tab in the retaining clip base may actuate the clamp. The finger pivot tab portion of the retaining clip base may angle away from the user's body for easier access. Raised plastic ridges may be molded into the clip holder and retaining clip base to improve the grip of the clamping action of the system.

The pivot is located as high as reasonable to stabilize the beverage bottle and retaining clip assembly on a waistband or belt. As a result, the center of gravity of the bottle is as low as possible with respects of the top of the waistband or belt.

The clip base may further include a pad attached to improve the user's comfort. In certain embodiments, the pad may be foam and may include an ID holder included for personal safety information and/or a key recess to securely store a house key or similar item. The storage space may be accessed using a storage tab. The upper portion of the retaining clip base and/or pad curves away from the body. This creates some area for a finger to slide next to the body to open the clamp for removal of the retaining clip.

It is believed that one of the keys to the improved function of the present design is in providing a wide and deep, padded, retaining clip base for maximum stability and comfort. The deep padded retaining clip base creates a longer pivot arm and helps to limit rocking of the bottle away from the body from flexing of the user's waistband. In addition, by locating the center of gravity of the bottle as close to the body as possible, it is possible to reduce or eliminate bottle rocking, even in heavy use conditions.

The pad may be an elastomeric fabric pad that is slid on from the bottom of the retaining clip base up to the pivot and then stretched around the finger pivot tab to secure the pad in place. In such embodiments, the user may remove the fabric pad for cleaning. Thinner versions of the pad may increase the stability of the system. Thicker versions may be more comfortable. A higher friction material, such as silicone, may be used on the pad to keep it in place on the skin under sweaty conditions. The higher friction material may be provided as small circular bumps or strips of the material used on the inside of cycle shorts to keep the pad in place. Alternatively, an elastomeric or rubber like paint may be used. While clipped on a belt, the higher friction material may help to reduce movement with respects to shirt or short fabric, which may otherwise have a low coefficient of friction.

It is contemplated that there are numerous bottle shapes that may be employed in the presently disclosed system. The bottle shapes may assist in the function and efficiency of the system. For example, in one embodiment, the bottle may contour inward to conform to the user's hand and fingers. The inward contour of the bottle may assist in improving the user's grip of the bottle. In another example, the bottle may contour outward and include finger recesses at the top and bottom of the bottle to improve the user's grip of the bottle. It is contemplated that both examples of bottles may fit into the same retaining clip.

The design of the retaining clip has been optimized to reduce failed attempts to re-seat the bottle during physical activity. The sides of the retaining seat of the retaining clip are curved and tapered to help center the bottle in place before snapping the shoulders of the bottle into place in the retaining clip. The retaining clip may be made of polymeric material that stretches elastically when the bottle is loaded incorrectly. The minimum point of deformation is achieved when the bottle is properly loaded. The deformation of the retaining clip or the bottle may provide feedback to the user indicating that the user is attempting to load the bottle at an incorrect orientation. Further, the deformation caused by mis-loading may gently nudge the bottle into the correct orientation.

Additionally, the bottom tab may act as a guide during loading by engaging the bottom pocket to encourage the bottle to slide into place. The bottom tab is adapted to mate with the bottom of the bottle. The bottom tab is rounded to permit the bottom tab to engage the bottom pocket from numerous angles. Even further, when angled for insertion, the depth of the bottom of the bottle is greater than the distance between the bottom tab and the opposing wall of the retaining clip. Thus, during insertion, the bottle may gently deform the bottom tab and consequently the bottom tab will exert a restoring force on the bottle towards the proper seating orientation. The height and width of the bottom tab may improve the bottom tab's ability to seat the bottle. This is especially important in assisting the user in properly "blindly" loading the bottle at a position along the user's lower back.

It is difficult to remove the bottle without squeezing it slightly. In some embodiments, the bottle tapers inward from the shoulder to the waist of the bottle and flairs outward from the waist to the bottom of the bottle. When squeezed near the shoulder, the waist of the bottle expands slightly outward increasing the volume of the bottle and preventing accidental discharge that otherwise may occur due to removing the bottle from the retaining clip.

Unlike prior designs, the system provided herein does not require squeezing the sides of the bottle inward to release it from the retaining clip. The presently disclosed system does not require any additional clip manipulation; the user must simply pull the bottle from the two shoulder tabs of the retaining clip bottle holder. The secure and alignment assisting seating mechanism formed by the interaction between the bottle and the retaining clip body help to properly seat the bottle within the clip and help to prevent the bottle from popping out of the retaining clip.

It is contemplated that by designing the back wall of the retaining clip bottle holder to be as narrow as possible, there is a greater grip area along the sides and some in back of bottle. It is contemplated that the increased grip area is important in preventing hand slippage, particularly when wearing

running gloves or with wet or sweaty hands. The inward contour and/or finger recesses also provide a mechanical advantage and undercut surface to improve grip of the bottle. By making the bottle narrow around the waist, the bottle is easier to grip around the perimeter by users with smaller hands, and the bottle is prevented from easily sliding up or down in the user's hand. In further embodiments, grip is improved by including patches of rough texture at expected grip points, such as the back waist of the bottle.

The retaining clip bottle holder and/or retaining clip base may include one or more stiffening ribs. The ribs may function to reduce flex and to secure the bottle to a greater degree. The ribs may also improve the grip of the clamp action of the retaining clip. Further, the retaining clip bottle holder and/or retaining clip base may include vent holes that permit airflow through the retaining clip to promote a cool, dry interface with the user's skin during physical activity.

It is contemplated that the bottle may be further secured within the retaining clip through the use of a small elastomeric band that acts as a strap to secure the bottle to the retaining clip around the valve portion of the cap. The elastomeric band may engage the cap valve to improve the retention of the bottle and may easily be manipulated out of the way to enable the bottle to be easily removed as described herein. The elastomeric band is able to retract back into a channel in the retaining clip base and move clear of the bottle and cap reseating area. While some existing systems have used elastomeric bands, they do not move away from the bottle seating mechanism and may cause reseating issues.

In alternate embodiments of the present subject matter, the retaining clip is designed to mate with a belt or armband. In these embodiments, the retaining clip may include a belt clip bottle holder that includes a passage for securing the retaining clip to a belt. The retaining clip further includes belt pad to provide stability to the retaining clip and to pad the interface between the retaining clip and the body. The belt pad may include a belt pad strap fabric, belt pad fabric, belt pad foam, and belt pad chamois. The belt pad strap fabric may secure the belt pad to the belt clip bottle holder. The belt pad strap fabric may be secured to the belt pad fabric by sewing, gluing, etc. The belt pad fabric and the belt pad chamois may enclose the belt pad foam and may be joined by sewing, gluing, etc.

It is contemplated that there are numerous bottle shapes that may be employed in the presently disclosed system. The bottle shapes may assist in the function and efficiency of the system. For example, as described, the bottle may contour inward to conform to the user's hand and fingers. The inward contour of the bottle may assist in improving the user's grip of the bottle. Alternatively, the bottle may be adapted to have increased rigidity by providing side contours and finger recesses that aid in preventing unplanned squirting while removing the bottle from the retaining clip. Further, the bottle may contour outward and include finger recesses at the top and bottom of the bottle to improve the user's grip of the bottle. It is contemplated that each example of the bottles described may fit into the same retaining clip.

In one embodiment, a wearable beverage bottle retaining clip includes a back wall, including a top portion, bottom portion, a front face, and a rear face; two shoulder tabs, each extending in front of the top portion of the back wall such that a first end of each shoulder tab is located in front of the front face of the back wall, wherein the shoulder tabs are at least partially hook-shaped and the first end of each shoulder tab is spaced apart across a width of the back wall; and a retaining seat extending in front of the bottom portion of the front face of the back wall, wherein the retaining seat includes a bottom tab that is configured such that when a beverage bottle is secured in the retaining clip, the bottom tab is in contact with the front face of the beverage bottle. In some examples, at least one shoulder tab includes a mating protrusion located near the first end of the shoulder tab. In additional examples, the back wall is pivotally attached to a retaining clip base. In some further examples, an elastomeric band including a pull tab that is retractable into a channel located inside the retaining clip base. In even further examples, the retaining clip base includes a pad. Moreover, in some examples, the retaining clip base further includes at least one vent hole. In yet further examples, the shoulder tabs are integrally formed with the back wall. In additional examples, the retaining seat is integrally formed with the back wall. In further examples, the sides of the retaining seat are curved and tapered. In even further examples, the back wall includes inwardly contoured sides.

In another embodiment, a wearable beverage bottle retaining clip includes snap-fit seating and securing mechanism including a retaining clip bottle holder hingedly connected to a retaining clip base, a pair of shoulder tabs extending from the retaining clip bottle holder, and a retaining seat, wherein the retaining seat is configured to secure the base of a beverage bottle through contact with a front and a rear of the beverage bottle, wherein the shoulder tabs are configured to secure a shoulder portion of the beverage bottle by each wrapping around a respective portion of the shoulder portion of the beverage bottle. In some examples, the shoulder tabs are elastomeric. In additional examples, the shoulder tabs exert pressure on the shoulder portion of the beverage bottle through elastic deformation of the shoulder tabs. In further examples, the retaining seat is elastomeric. In even further examples, the retaining seat exerts pressure on the base of the beverage bottle through elastic deformation of the retaining seat.

In a further embodiment, a snap-fit beverage bottle and retaining clip assembly includes a beverage bottle including a shoulder portion including a pair of shoulder pockets and a base including bottom pocket; and a snap-fit seating and securing mechanism into which the beverage bottle is secured, wherein the snap-fit seating and securing mechanism includes a retaining clip bottle holder hingedly connected to a retaining clip base, a pair of shoulder tabs extending from the retaining clip bottle holder, and a retaining seat including a bottom tab, wherein the retaining seat is configured to secure the base of the beverage bottle wherein the bottom tab cooperates with the bottom pocket of the beverage bottle to assist in securing the beverage bottle, wherein the shoulder tabs are configured to secure the shoulder portion of the beverage bottle by each wrapping around a respective shoulder portion of the beverage bottle such that the shoulder tabs cooperate with the shoulder pockets of the beverage bottle to assist in securing the beverage bottle. In some examples, the beverage bottle further includes a concave waist portion that is narrower than the shoulder portion. In additional examples, the beverage bottle further includes a convex waist portion that is wider than the shoulder portion. In further examples, at least one shoulder tab includes a mating protrusion located near the first end of the shoulder tab that mates within the respective shoulder pocket of the beverage bottle. In even further examples, the shoulder tabs and the retaining seat are elastomeric.

An advantage of the system provided herein is it provides an improved mechanism hands-free carrying of hydration and nutrition bottles during physical activity.

Another advantage of the system provided herein is the clamping feature may be used with a belt and waistband to assist in securing the belt in place. This prevents ride up of the

belt and restriction of the diaphragm, which may restrict the user's breathing. This is believed to be a significant advantage over the existing systems. Clipping the belt to the user's waistband virtually eliminates belt ride up, except for the very opposite end of the belt. Using two clamps may be effective in keeping the entire belt in place. The clamps further prevent the belt from twisting around the body. Further, keeping the belt on the surface of the user's shorts helps reduce rubbing of the edge of the belt on the user's skin, which will cause irritation. The combination of the clip mechanism, belt, and waistband may provide a significantly improved system.

A further advantage of system provided herein is it provides a comfortable and stable solution during user activity.

Another advantage of system provided herein is it provides a snap-fit retention mechanism that provides durable, repeatable, secure, and easy to seat connection between the bottle and the retaining clip.

Yet another advantage of system provided herein is it provides an appropriately padded interface between the system and the user's body.

Still another advantage of system provided herein is it provides a system that may be located close enough to the user's body to improve comfort and security of the system in use.

Another advantage of system provided herein is it provides a bottle that reduces the likelihood of accidental discharge or squirting as the bottle is removed and replaced in the retention clip.

Additional objects, advantages and novel features of the examples will be set forth in part in the description which follows, and in part will become apparent to those skilled in the art upon examination of the following description and the accompanying drawings or may be learned by production or operation of the examples. The objects and advantages of the concepts may be realized and attained by means of the methodologies, instrumentalities and combinations particularly pointed out in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawing figures depict one or more implementations in accord with the present concepts, by way of example only, not by way of limitations. In the figures, like reference numerals refer to the same or similar elements.

FIG. **1**A is a front perspective view of an example of a beverage bottle and retaining clip assembly.

FIG. **1**B is a back perspective view of the beverage bottle and retaining clip assembly of FIG. **1**A showing the bottle secured in place with an elastomeric band.

FIG. **2**A is a front view of the beverage bottle and retaining clip assembly of FIG. **1**A.

FIG. **2**B is a side view of the beverage bottle and retaining clip assembly of FIG. **1**A.

FIG. **3** is an exploded view of the beverage bottle and retaining clip assembly of FIG. **1**A.

FIG. **4** is an exploded view of an example of a beverage bottle and retaining clip assembly designed to mate with a belt or armband.

FIG. **5** is a front perspective view of an example of a beverage bottle and retaining clip assembly including a bottle with increased volume.

DETAILED DESCRIPTION OF THE INVENTION

In one embodiment, a wearable beverage bottle retaining clip **20** includes a back wall **24**, including a top portion, bottom portion, a front face, and a rear face; two shoulder tabs **25**, each extending in front of the top portion of the back wall **24** such that a first end of each shoulder tab **25** is located in front of the front face of the back wall **24**, wherein the shoulder tabs **25** are at least partially hook-shaped and the first end of each shoulder tab **25** is spaced apart across a width of the back wall **24**; and a retaining seat **27** extending in front of the bottom portion of the front face of the back wall **24**, wherein the retaining seat **27** includes a bottom tab **22** that is configured such that when a beverage bottle **10** is secured in the retaining clip **20**, the bottom tab **22** is in contact with the front face of the beverage bottle **10**. In some examples, at least one shoulder tab **25** includes a mating protrusion **26** located near the first end of the shoulder tab **25**. In additional examples, the back wall **24** is pivotally attached to a retaining clip base **40**. In some further examples, an elastomeric band **80** including a pull tab **82** that is retractable into a channel located inside the retaining clip base **40**. In even further examples, the retaining clip base **40** includes a pad **60**. Moreover, in some examples, the retaining clip base **40** further includes at least one vent hole **46**. In yet further examples, the shoulder tabs **25** are integrally formed with the back wall **24**. In additional examples, the retaining seat **27** is integrally formed with the back wall **24**. In further examples, the sides of the retaining seat **27** are curved and tapered. In even further examples, the back wall **24** includes inwardly contoured sides.

In another embodiment, a wearable beverage bottle retaining clip **20** includes snap-fit seating and securing mechanism including a retaining clip bottle holder **21** hingedly connected to a retaining clip base **40**, a pair of shoulder tabs **25** extending from the retaining clip bottle holder **21**, and a retaining seat **27**, wherein the retaining seat **27** is configured to secure the base of a beverage bottle **10** through contact with a front and a rear of the beverage bottle **10**, wherein the shoulder tabs **25** are configured to secure a shoulder portion of the beverage bottle **10** by each wrapping around a respective portion of the shoulder portion **12** of the beverage bottle **10**. In some examples, the shoulder tabs **25** are elastomeric. In additional examples, the shoulder tabs **25** exert pressure on the shoulder portion **12** of the beverage bottle **10** through elastic deformation of the shoulder tabs **25**. In further examples, the retaining seat **27** is elastomeric. In even further examples, the retaining seat **27** exerts pressure on the base of the beverage bottle **10** through elastic deformation of the retaining seat **27**.

In a further embodiment, a snap-fit beverage bottle and retaining clip assembly **100** includes a beverage bottle **10** including a shoulder portion **12** including a pair of shoulder pockets **16** and a base including bottom pocket **14**; and a snap-fit seating and securing mechanism into which the beverage bottle **10** is secured, wherein the snap-fit seating and securing mechanism includes a retaining clip bottle holder **21** hingedly connected to a retaining clip base **40**, a pair of shoulder tabs **25** extending from the retaining clip bottle holder **21**, and a retaining seat **27** including a bottom tab **22**, wherein the retaining seat **27** is configured to secure the base of the beverage bottle **10** wherein the bottom tab **22** cooperates with the bottom pocket **14** of the beverage bottle to assist in securing the beverage bottle **10**, wherein the shoulder tabs **25** are configured to secure the shoulder portion **12** of the beverage bottle **10** by each wrapping around a respective shoulder portion **12** of the beverage bottle such that the shoulder tabs **25** cooperate with the shoulder pockets **16** of the beverage bottle **10** to assist in securing the beverage bottle **10**. In some examples, the beverage bottle **10** further includes a concave waist portion **11** that is narrower than the shoulder portion **12**. In additional examples, the beverage bottle **10** further includes a convex waist portion **11** that is wider than the shoulder portion **12**. In further examples, at least one

shoulder tab **25** includes a mating protrusion **26** located near the first end of the shoulder tab **25** that mates within the respective shoulder pocket **16** of the beverage bottle **10**. In even further examples, the shoulder tabs **25** and the retaining seat **27** are elastomeric.

FIGS. **1**A, **1**B, **2**A, and **2**B illustrate an example of a beverage bottle and retaining clip assembly **100**. As shown in FIG. **1**A, the beverage bottle and retaining clip assembly **100** includes a beverage bottle **10**, and retaining clip **20**. The retaining clip **20** secures the bottle **10** while the user is engaged in physical activity, and permits the user to quickly release the beverage bottle **10** as needed.

In one embodiment, the beverage bottle and retaining clip assembly **100** provided herein includes a blow-molded bottle **10** including a cap **30**. When not in use, the bottle **10** is stowed in the retaining clip **20**. The bottle **10** rests on a retaining seat **27** of the retaining clip **20**, and is secured in a snap-fit connection by a bottom tab **22** and two shoulder tabs **25**. The bottom tab **22** may be a semi-circular hook extending from the retaining seat **27** that mates with a bottom pocket **14** molded into the bottom of the bottle **10**. The shoulder tabs **25** may secure the bottle **10** at the shoulder **12**. The shoulder tabs **25** may include mating protrusions **26** that are raised features that engage recessed shoulder pockets **16**.

Unlike prior designs, the beverage bottle and retaining clip system **100** provided herein does not require squeezing the sides of the bottle **10** inward to release it from the retaining clip **20**. In use, the bottle **10** snaps out from the shoulder tabs **25** of the retaining clip **20** and away from the retaining seat **27** at the bottom of the retaining clip **20**. For re-seating, the bottom of the bottle **10** is toed into the retaining clip **20** first and then the shoulders **12** of the bottle are snapped in place with the cap **30** being centered between the shoulder tabs **25**.

The design of the retaining clip **20** has been optimized to reduce failed attempts to re-seat the bottle **10** during physical activity. The sides of the retaining seat **27** of the retaining clip **20** are curved and tapered to help center the bottle **10** in place before snapping the shoulders **12** of the bottle into place in the retaining clip **20**. The retaining clip **20** may be made of polymeric material that stretches elastically when the bottle **10** is loaded incorrectly. The minimum point of deformation is achieved when the bottle **10** is properly loaded. The deformation of the retaining clip **20** or the bottle **10** may provide feedback to the user indicating that the user is attempting to load the bottle **10** at an incorrect orientation. Further, the deformation caused by mis-loading may gently nudge the bottle **10** into the correct orientation.

Additionally, the bottom tab **22** may act as a guide during loading by engaging the bottom pocket **14** (FIG. **3**) to encourage the bottle **10** to slide into place. The bottom tab **22** is adapted to mate with the bottom of the bottle **10**. The bottom tab **22** is rounded to permit the bottom tab **22** to engage the bottom pocket **14** from numerous angles. Once engaged, the sidewalls of the bottom pocket **14** interact with the sidewalls of the bottom tab **22** to prevent side-to-side movement of the bottle during re-seating. Even further, when angled for insertion, the depth of the bottom of the bottle **10** is greater than the distance between the bottom tab **22** and the opposing wall of the retaining clip **20**. Thus, during insertion, the bottle **10** may gently deform the bottom tab **22** and consequently the bottom tab **10** will exert a restoring force on the bottle **10** towards the proper seating orientation. Moreover, the height and width of the bottom tab **22** may improve the bottom tab's ability to seat the bottle **10**. This is especially important in assisting the user in properly "blindly" loading the bottle **10** at a position along the user's lower back.

It is difficult to remove the bottle **10** without squeezing it slightly. In the preferred embodiment of the bottle **10** shown in FIGS. **1**A-**2**B, the bottle **10** tapers inward from the shoulder **12** to the waist **11** of the bottle **10** and flairs outward from the waist **11** to the bottom of the bottle **10**. When squeezed near the waist **11**, the front and back of the bottle **10** expand slightly outward increasing the volume of the bottle **10** and preventing accidental discharge that otherwise may occur due to removing the bottle **10** from the retaining clip **20**.

As shown in FIG. **2**B, in one embodiment, the retaining clip **20** includes a retaining clip bottle holder **21** mated to a retaining clip base **40** at a pivot **45** and the two elements are secured together via a metal spring **50**. The retaining clip bottle holder **21** and retaining clip base **40** form a spring-loaded clamp that may be secured to a user's waistband similar to the clamping action of a plastic clothes hanger. Squeezing the cap **30** and a finger pivot tab portion **49** of the clip base **40** may actuate the clamp. The finger pivot tab portion **49** of the retaining clip base **40** may angle away from the user's body for easier access and create some area for a finger to slide next to the body to open the clamp for removal of the retaining clip **20**.

As further shown in FIG. **2**B, the pivot **45** is located as high as reasonable to stabilize the beverage bottle and retaining clip system **100** on a waistband or belt. As a result, the center of gravity of the bottle **10** is as low as possible with respects of the top of the waistband or belt. Further, raised plastic ridges **47** may be molded into the retaining clip bottle holder **21** and retaining clip base **40** to improve the grip of the clamping action of the beverage bottle and retaining clip system **100**.

FIG. **3** shows an exploded view of the beverage bottle and retaining clip assembly of FIGS. **1**A-**2**B. As shown, the cap **30** may include a valve **32** that releases fluid when the bottle **10** is squeezed, but sealed during regular use. In various embodiments, the valve **32** may be a silicone J or "Zel" valve, a spray valve, a bite valve, a dual valve, etc.

As also shown in FIG. **3**, the retaining clip **20** includes a retaining clip bottle holder **21** and retaining clip base **40** that are joined together by the spring **50** at the pivot **45**. The retaining clip bottle holder **21** and retaining clip base body **44** may be injection molded plastic. The retaining clip base **40** includes the retaining clip base body **44** that provides the structural basis of the retaining clip base **40**. Retaining clip pad fabric **44** and a foam pad **60** encloses the retaining clip base body **44**.

The pad **60** is adapted to improve the user's comfort. The pad **60** may be an elastomeric fabric pad **60** that is slid on from the bottom of the clip base up to the pivot **45** and then stretched around the finger pivot tab of the retaining clip base body **44** to secure the pad **60** in place. In such embodiments, the user may remove the fabric pad **60** for cleaning. Thinner versions of the pad may increase the stability of the system. Thicker versions may be more comfortable. A higher friction material, such as silicone, may be used on the pad **60** to keep it in place on the skin under sweaty conditions. The higher friction material may be provided as small circular bumps or strips to keep the pad in place. Alternatively, an elastomeric or rubber-like paint may be used. While clipped on a belt, the higher friction material may help to reduce movement with respects to shirt or short fabric, which may otherwise have a low coefficient of friction. In certain embodiments, the pad **60** may include a space to store personal items, such as an ID card **64** or a key. The storage space may be accessed using a storage tab **62**.

It is believed that one of the keys to the improved function of the present design is in providing a wide and deep, padded, retaining clip base **40** for maximum stability and comfort.

The deep padded clip base **40** creates a longer pivot arm and helps to limit rocking of the bottle **10** away from the body due to flexing of the user's waistband. In addition, by locating the center of gravity of the bottle as close to the body as possible, it is possible to reduce or eliminate bottle rocking, even in heavy use conditions.

It is contemplated that by designing the back wall **24** of the retaining clip bottle holder **21** to be as narrow as possible, there is a greater grip clearance along the sides and some in back of bottle. It is contemplated that the increased grip area is important in preventing hand slippage, particularly when wearing running gloves or with wet or sweaty hands. The inward contour and finger recesses also provide a mechanical advantage and undercut surface to improve grip of the bottle **10**. By making the bottle **10** narrow around the waist **11**, the bottle **10** is easier to grip around the perimeter by users with smaller hands, and the bottle **10** is prevented from easily sliding up or down in the user's hand. In further embodiments, grip is improved by including patches of rough texture at expected grip points, such as the back waist of the bottle **10**.

The retaining clip bottle holder **21** and/or retaining clip base **40** may include one or more stiffening ribs **48**. The ribs may function to reduce flex and to secure the bottle **10** to a greater degree. The stiffening ribs **48** may also improve the grip of the retaining clip **20** to the belt or shorts. Further, the retaining clip bottle holder **21** and/or retaining clip base **40** may include vent holes **46** that permit airflow through the retaining clip to promote a cool, dry interface with the user's skin during physical activity.

It is contemplated that the bottle **10** may be further secured within the retaining clip **20** through the use of a small elastomeric band **80** that acts as a strap to secure the bottle **10** to the retaining clip **20** around the valve stem of the cap **30**. The elastomeric band **80** may include a pull tab **82** to permit easy engagement and disengagement of the elastomeric band **80**. The elastomeric band **80** may retract back into a channel in the retaining clip base body **44** and move clear of the bottle and cap reseating area. While some existing systems have used elastomeric bands, they do not move away from the bottle seating mechanism and may cause reseating issues.

As shown in FIG. **4**, in alternate embodiments of the beverage bottle and retaining clip assembly **100**, the retaining clip **20** is designed to mate with a belt or armband. In the embodiment shown in FIG. **4**, the belt clip bottle holder **70** of the retaining clip **20** includes a passage **72** for securing the retaining clip **20** to a belt. The retaining clip **20** further includes belt pad **90** to provide stability to the retaining clip **20** and to pad the interface between the retaining clip **20** and the body. The belt pad **90** may include a belt pad strap fabric **92**, belt pad fabric **92**, belt pad foam **96**, and belt pad chamois **98**. The belt pad strap fabric **92** may secure the belt pad **90** to the belt clip bottle holder **70**. The belt pad strap fabric **92** may be secured to the belt pad fabric **94** by sewing, gluing, etc. The belt pad fabric **94** and the belt pad chamois **98** may enclose the belt pad foam **96** and may be joined by sewing, gluing, etc.

It is contemplated that there are numerous bottle shapes that may be employed in the presently disclosed system. The bottle shapes may assist in the function and efficiency of the system. For example, in the embodiment shown in FIGS. **1A-4**, the bottle **10** may contour inward to conform to the user's hand and fingers. The inward contour of the bottle **10** may assist in improving the user's grip of the bottle. Alternatively, the embodiments of the bottle **10** shown in FIG. **5** may be adapted to have increased rigidity by providing side contours and finger recesses **18** that aids in preventing unplanned squirting while removing the bottle from the retaining clip **20**. As shown in FIG. **5**, in another example of the beverage bottle and retaining clip assembly **100**, the bottle **10** may contour outward and include finger recesses at the top and bottom of the bottle **10** to improve the user's grip of the bottle **10**. It is contemplated that the examples of bottles described may fit into the same retaining clip.

It should be noted that various changes and modifications to the presently preferred embodiments described herein will be apparent to those skilled in the art. Such changes and modifications may be made without departing from the spirit and scope of the present invention and without diminishing its attendant advantages.

I claim:

1. A wearable beverage bottle retaining clip comprising:

a back wall, including a top portion, bottom portion, a front face, and a rear face;

two shoulder tabs, each extending in front of the top portion of the back wall such that a first end of each shoulder tab is located in front of the front face of the back wall, wherein the shoulder tabs are at least partially hook-shaped and the first end of each shoulder tab is spaced apart across a width of the back wall;

a retaining seat extending in front of the bottom portion of the front face of the back wall, wherein the retaining seat includes a bottom tab that is configured such that when a beverage bottle is secured in the retaining clip, the bottom tab is in contact with the front face of the beverage bottle; and

an elastomeric band including a pull tab that is retractable into a channel located inside the retaining clip base.

2. The beverage bottle retaining clip of claim **1** wherein at least one shoulder tab includes a mating protrusion located near the first end of the shoulder tab.

3. The beverage bottle retaining clip of claim **1** wherein the back wall is pivotally attached to a retaining clip base.

4. The beverage bottle retaining clip of claim **3** wherein the retaining clip base includes a pad.

5. The beverage bottle retaining clip of claim **4** wherein the retaining clip base further includes at least one vent hole.

6. The beverage bottle retaining clip of claim **1** wherein the shoulder tabs are integrally formed with the back wall.

7. The beverage bottle retaining clip of claim **1** wherein the retaining seat is integrally formed with the back wall.

8. The beverage bottle retaining clip of claim **1** wherein sides of the retaining seat are curved and tapered.

9. The beverage bottle retaining clip of claim **1** wherein the back wall includes inwardly contoured sides.

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